The Effects of Dairy Product and Dairy Protein Intake on Inflammation: A Systematic Review of the Literature

Nieman KM, Anderson BD, Cifelli CJ. *J Am Coll Nutr*. 2020;1-12.

Prevention and management of chronic inflammation is important because it can impact the development of various chronic diseases like cardiovascular disease and type 2 diabetes. Nearly 25% of American adults who want health benefits from foods look for lower inflammatory foods.[1] Many wonder how dairy foods impact inflammation. This systematic review of 27 randomized controlled trials* reported that dairy foods (e.g., milk, cheese and yogurt) have neutral to beneficial effects on biomarkers of inflammation.

In addition to examining the impact of dairy foods on biomarkers of inflammation, the review also examined the role of dairy proteins, casein and whey, on biomarkers of inflammation and found no adverse effects. While some studies have suggested animal protein intake may be associated with increased cardiovascular disease and mortality, all 8 trials in this review that investigated consumption of dairy protein on biomarkers of inflammation reported no effect.

This review adds to a growing body of scientific evidence that finds **adequate dairy consumption as part of a nutrient-rich, balanced diet is not adversely linked to chronic inflammation, but rather has potential beneficial effects on inflammation**.[2,3,4]

*This review focused on trials including adults who were 1) healthy, 2) overweight/obese, but otherwise healthy and 3) overweight/obese with chronic disease, but not with any diagnosis of severe inflammatory-related disorders. It also included dietary interventions with a minimum 2-week duration and a non-dairy or low-dairy control group.

Healthy Eating Pattern Including **Low-Fat Dairy Foods (e.g., low-fat milk, cheese, yogurt)** → Lower Chronic Inflammation → Reduced Chronic Disease Risk

Why is inflammation important?

Chronic inflammation is considered a symptom of a continuous, out-of-balance immune system with higher amounts of pro-inflammatory signaling molecules. It is a key contributor to chronic disease risk – including metabolic diseases such as cardiovascular disease and type 2 diabetes. Diet impacts the body's inflammatory state.

Not surprisingly, over the past decade, a robust body of literature has revealed a significant link between the consumption of dairy foods and reduced risk of metabolic diseases associated with chronic inflammation.[5]

Does the saturated fat in dairy products cause inflammation?

No. The anti-inflammatory effects of dairy products have been seen in dairy products regardless of their fat level. Clinical trials comparing low-fat and full-fat dairy have shown no differences in blood inflammatory biomarkers.[6,7]

Does the lactose in dairy products cause inflammation?

No. The evidence shows dairy foods, including those which contain lactose have neutral (no effect) or beneficial (anti-inflammatory) effects on biomarkers of inflammation.

A National Institute of Health expert panel on lactose intolerance (LI) suggests that even individuals with LI can include dairy foods in their diet. There are many strategies, including lactose free milk, natural cheeses and yogurt, that can help these individuals enjoy dairy foods and avoid nutrient shortfalls.[8]

Helping Manage Inflammation Through Lifestyle Habits

There are several ways to help chronic inflammation, including eating a healthy diet, getting regular exercise, managing stress levels and smoking cessation for those who smoke.

Healthy eating patterns that include low-fat dairy foods, like milk, cheese and yogurt, as well as fruits, vegetables, whole grains and lean proteins can have anti-inflammatory effects.

Specific foods can contribute (i.e., inflammatory) or reduce (i.e., anti-inflammatory) inflammation. Researchers have developed validated approaches to assess whole foods impact on inflammation.

Foods with Anti-Inflammatory Effects

The following foods have been found to reduce inflammatory biomarkers.[9]

- Tomatoes
- Apples and berries
- Deep yellow and orange fruits and vegetables
- Poultry
- Nuts
- Coffee and tea
- Other fruits and vegetables
- Dairy Foods (e.g., whole and low-fat milk, cheese, yogurt)
- Leafy greens and cruciferous vegetables
- Fish
- Legumes

Tandoori Grilled Chicken and Fattoush Salad with Greek Yogurt Dressing

Makes 4 Servings
Prep Time: 30 minutes

Tandoori Chicken

1 ½ cups Greek Yogurt
3 TB freshly squeezed lemon juice
4 cloves garlic, minced
1 tsp fresh ginger, grated
1 tsp coriander
1 tsp ground cumin
1 tsp smoked paprika
½ tsp garam masala
¼ tsp cayenne pepper
1 tsp salt
½ tsp freshly ground pepper
1 ½ lbs. chicken breast

Fattoush Salad

1 cup cherry tomatoes, halved
½ pound Persian cucumbers, thinly sliced
½ cup radishes, thinly sliced
4 scallions, thinly sliced
2 baby romaine lettuces, torn into bite sized pieces
¼ cup parsley leaves, minced
¼ cup mint leaves
¼ cup pomegranate arils
½ cup reserved Greek yogurt mixture from Tandoori Chicken
2 whole-grain pita pockets, halved and toasted until golden brown
Ground sumac, to taste

Tandoori Chicken

1. Combine Greek yogurt, lemon juice and garlic in a bowl. Transfer half of the yogurt mixture to a resealable bag. Cover the remaining yogurt mixture and reserve in the refrigerator for use as dressing for the salad.
2. Add grated ginger, coriander, cumin, smoked paprika, garam masala, cayenne pepper, salt and pepper to the yogurt in the bag. Add the chicken breasts and seal the bag. Squeeze the sealed bag until the yogurt mixture and spices fully coat the chicken. Place the bag in the refrigerator to marinate for at least 30 minutes or as long as overnight.
3. When ready to cook, preheat a gas or charcoal grill to 450 degrees. When grill is hot, add chicken breasts and grill for 7 minutes per side, rotating twice per side.
4. Transfer grilled chicken to a plate and allow to rest, tented with foil, for 10 minutes before serving. Serve with Fattoush Salad.

Fattoush Salad

1. Mix tomatoes, cucumbers, radishes, scallions, lettuce, parsley, mint and pomegranate arils in a large bowl.
2. Add 3/4 of dressing; toss to coat, adding more dressing by tablespoonfuls as needed. Season to taste with salt and pepper.
3. Add pita; toss once. Sprinkle sumac over top of salad, if desired.

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